CLAIMS

We Claim:

1. A catalyst composition comprising, in combination, or made from a polymerization catalyst system and at least one gelling agent.

2. The catalyst composition of claim 1 wherein the gelling agent is selected from of the groups consisting of: aluminum ortho-phosphates, diester phosphates, steroid and anthryl derivatives, amino acid-type gelators, organometallic compounds and quaternary ammonium salts.

3. The catalyst composition of claim 1 wherein the gelling agent is selected from the groups consisting of: tetraoctadecyl ammonium bromide, dihexadecylaluminum ortho phosphate, 2,3-bis-n-decyloxy-anthracene, cholesteryl 4-(2-anthryloxy) butanoate and cholesteryl anthraquinone-2-carboxylate.

4. The catalyst composition of claim 1 wherein the gelling agent is selected from the groups consisting of: bicopper tetracarboxylate complex, steroid derivatives, dihydrolanosterol anthryl derivatives and organometallic compounds.

5. The catalyst composition of claim 1 wherein the polymerization catalyst is a supported polymerization catalyst comprising a carrier.

6. A method for making a catalyst composition, the method comprising the steps of:
   (a) forming a polymerization catalyst; and
   (b) adding at least one gelling agent.

7. The method of claim 6 wherein the polymerization catalyst comprises a carrier.

8. The method of claim 6 wherein the gelling agent is selected from the groups consisting of: aluminum ortho-phosphates, diester phosphates, steroid and anthryl derivatives, amino acid-type gelators, organometallic compounds and quaternary ammonium salts.

9. A continuous process for polymerizing olefin monomer(s) in a reactor under polymerization conditions, the process comprising the steps of:
   (a) introducing olefin monomer(s) to the reactor;

(b) introducing a polymerization catalyst system and at least one gelling agent to the reactor; and
(c) withdrawing a polymer product from the reactor.

10. The process of claim 9 wherein the process is a slurry process.

11. The process of claim 9 wherein the process is a gas phase process.

12. The process of claim 9 wherein the gelling agent is contacted with the polymerization catalyst system prior its to introduction into the reactor.

13. The process of claim 9 wherein the gelling agent is selected from the groups consisting of: aluminum ortho-phosphates, diester phosphates, steroid and anthryl derivatives, amino acid-type gelators, organometallic compounds and quaternary ammonium salts.

14. A continuous gas phase process for polymerizing monomer(s) in a reactor, said process comprising the steps of:
(a) introducing a recycle stream into the reactor, the recycle stream comprising one or more monomer(s);
(b) introducing a polymerization catalyst system and at least one gelling agent into the reactor;
(c) withdrawing the recycle stream from the reactor;
(d) cooling the recycle stream;
(e) reintroducing the recycle stream into the reactor;
(f) introducing into the reactor additional monomer(s) to replace the monomer(s) polymerized; and
(g) withdrawing a polymer product from the reactor.

15. The process of claim 14 wherein the gelling agent is contacted with the polymerization catalyst prior to its introduction to the reactor.

16. The process of claim 14 wherein the polymerization catalyst comprises a carrier.

17. The process of 14 wherein the gelling agent is selected from the groups consisting of: aluminum ortho-phosphates, diester phosphates, steroid and anthryl

derivatives, amino acid-type gelators, organometallic compounds and quaternary ammonium salts.

18. A continuous gas phase polymerization process for polymerizing ethylene and one or more alpha-olefins having 4 or more carbon atoms at a pressure in the range of from about 200 psig (1379 kPa) to about 400 psig (2759 kPa), a polymerization temperature in the range of from about 70°C to about 110°C, at a production rate of greater than 10,000 pounds (4540 Kg) of a polymer product per hour, and at a polymerization catalyst productivity of greater than 1500 grams of the polymer product per gram of the polymerization catalyst, the process operating in the presence of at least one gelling agent.